

Title (en)  
COOLING SYSTEM AND COOLING METHOD OF ROLLING STEEL

Title (de)  
KÜHLSYSTEM UND KÜHLVERFAHREN ZUM WALZEN VON STAHL

Title (fr)  
SYSTÈME DE REFROIDISSEMENT ET PROCÉDÉ DE REFROIDISSEMENT D'ACIER DE LAMINAGE

Publication  
**EP 2253394 B1 20180404 (EN)**

Application  
**EP 09714692 A 20090225**

Priority  
• JP 2009053377 W 20090225  
• JP 2008046461 A 20080227  
• JP 2008048383 A 20080228

Abstract (en)  
[origin: EP2253394A1] A cooling system that cools hot rolled long steel bar, provided with a plurality of chambers that are arranged along the longitudinal direction of the rolled steel bar. Each of the plurality of chambers is provided with a blow outlet that, facing from the chamber to the rolled steel bar, blows out compressed air for cooling that is introduced to the chamber from a gas inlet that is connected to the chamber; a nozzle plate having a plurality of nozzle holes that is provided at this blow outlet so as to face the rolled steel bar; a cooling water supply nozzle that supplies cooling water into the chamber; and a rectifying plate that is provided between the gas inlet and the cooling water supply nozzle, and that prevents the compressed gas for cooling that is introduced from the gas inlet from directly striking the nozzle plate. The cooling system of the present invention sprays a cooling medium that is produced by mixing the cooling water that is supplied from the cooling water supply nozzle and the compressed gas for cooling that is introduced from the gas inlet and rectified by the rectifying plate toward the rolled steel bar through the nozzle holes of the nozzle plate, and performs uniform cooling of the surfaces of the rolled steel bar.

IPC 8 full level  
**B21B 45/02** (2006.01); **C21D 1/00** (2006.01); **C21D 8/00** (2006.01); **C21D 9/04** (2006.01)

CPC (source: EP US)  
**B21B 45/0215** (2013.01 - EP US); **C21D 1/667** (2013.01 - EP US); **C21D 9/04** (2013.01 - EP US); **B21B 1/085** (2013.01 - EP US); **B21B 45/0233** (2013.01 - EP US); **C21D 9/0075** (2013.01 - EP US); **C21D 9/06** (2013.01 - EP US); **C21D 9/525** (2013.01 - EP US); **C21D 9/5732** (2013.01 - EP US); **C21D 9/5735** (2013.01 - EP US); **C21D 11/005** (2013.01 - EP US)

Cited by  
CN103820734A; EP2987872A4; CN102269668A; CN102534145A; RU2614861C2; EA031494B1; WO2015105432A1

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)  
**EP 2253394 A1 20101124; EP 2253394 A4 20161130; EP 2253394 B1 20180404**; AU 2009218189 A1 20090903; AU 2009218189 B2 20140522; BR PI0908257 A2 20150721; BR PI0908257 B1 20201013; CA 2715320 A1 20090903; CA 2715320 C 20131029; CN 101959626 A 20110126; CN 101959626 B 20121003; ES 2665045 T3 20180424; KR 101227213 B1 20130128; KR 20100102232 A 20100920; RU 2010136833 A 20120410; RU 2450877 C1 20120520; US 2010307646 A1 20101209; US 2014208780 A1 20140731; US 8715565 B2 20140506; US 9255304 B2 20160209; WO 2009107639 A1 20090903

DOCDB simple family (application)  
**EP 09714692 A 20090225**; AU 2009218189 A 20090225; BR PI0908257 A 20090225; CA 2715320 A 20090225; CN 200980106286 A 20090225; ES 09714692 T 20090225; JP 2009053377 W 20090225; RU 20107018740 A 20090225; RU 2010136833 A 20090225; US 201414223328 A 20140324; US 86770609 A 20090225